

ATN Pre-Budget Submission (August 2020)

24 August 2020

The Australian Technology Network of Universities (ATN) welcomes the opportunity to constructively work with the Morrison Government on developing the 2020-21 Budget.

ATN is the peak body representing Australia's four most innovative and enterprising universities: Curtin University, RMIT University, University of South Australia (UniSA), and University of Technology Sydney (UTS). Together, we are home to nearly 200,000 university students.

Australia's university sector plays an important role in the economic development of our nation. We educate the pipeline of employable graduates, we work with our businesses to develop new products and drive productivity, and we are also large employers. ATN universities directly employ almost 14,000 full and part-time staff and Australia's universities as a whole employ over 120,000 staff.

Universities, like the rest of Australian society and economy, are still adjusting, adapting and living with the COVID-19 pandemic. The way we collectively tackle the immediate crises presented by the pandemic and prepare for the recovery will have long-term effects on Australia's prosperity.

Our approach can be summarised into three focus areas with the following recommendations:

Just participation

Driving an equitable recovery from the pandemic by ensuring access to tertiary education that is adapted to students and the post-pandemic economy

- Recommendation 1: Recognise regional needs in skills attainment
- Recommendation 2: Enable a just transition for affected workers
- Recommendation 3: Support higher education to adapt to new types of students
- Recommendation 4: Investment in job and career transition programs

Pivoting pathways

Providing pathways in partnership with industry that allow higher education to be more responsive and flexible

- Recommendation 5: Funding mechanism for short courses and stackable credentials
- Recommendation 6: Reform postgraduate provision to meet student and industry needs and expectations
- Recommendation 7: Support industry to engage with teaching and learning
- Recommendation 8: Encourage more businesses to employ PhD graduates and embrace innovation
- Recommendation 9: Encourage co-investment in skills by Government, universities and businesses

Productive partnerships

Building effective and strategic partnerships between higher education, industry and governments to build the post-pandemic economy

- Recommendation 10: Create trans-national campus launching pads
- Recommendation 11: Back revenue contingent loans for research and development
- Recommendation 12: Set up a research translation fund
- Recommendation 13: Set up a business re-structure fund
- Recommendation 14: Build a network of national strategic capability
- Recommendation 15: Maintain a research pipeline

ATN universities support the Morrison Government's policy ambitions for a skills led recovery. We are also working constructively with the Government and other partners to reshape research and its funding mechanisms.

For universities, the crisis and recovery mean several years of restructuring and reshaping our teaching, learning and research. As public institutions, it also means providing just and meaningful pathways (combining education and work) for Australians affected by the economic crisis and shifting industrial landscape, applying our research expertise and infrastructure to solving Australia's wicked problems, and making transformative and regenerative connections with businesses.

The pandemic is laying bare and amplifying many of the existing fault lines in our society and economy. It has accelerated many of the challenges we were already facing, like the changing nature of skills and work, the tensions that existed in Australia's industrial relations landscape, finding our place in the global economy, and managing an ageing population. ATN universities are ready to do their part in addressing these challenges.

The downturn in international students will affect campus life for several years, even if students return in significant numbers in 2021. ATN universities have been nimble and innovative with transitioning students online, which has somewhat mitigated the losses.

ATN universities are already working to address the opportunities and challenges that existed before and have been amplified by the pandemic.

ATN universities are highly engaged with a wide network of businesses, especially small and medium enterprises (SMEs). Thousands of SMEs have accessed UTS's Data Arena – a high-tech, large-scale data visualisation dome that uses big data to help business owners understand the multifarious implications of their decisions. RMIT's Advanced Manufacturing Precinct speeds up the SME prototyping and manufacturing process. Innovation Central Perth at Curtin brings together industry and researchers to solve business problems and test products for SMEs. At UniSA, the new Industry 4.0 Testlab is co-located with more than 80 SMEs in defence, aerospace, electronics, engineering and IT, providing them access to smart factory technologies.

Beginning at the end of 2019, academics from UTS began teaching Telstra employees big data, machine learning and artificial intelligence. The appealing feature of working with UTS from Telstra's perspective was their research profile and their capacity to deliver re-skilling for its workers in bite-size credentials that have the capacity to be flexible enough to be delivered inside the company.

Curtin is partnering with Optus on research on the latest 5G technology. This partnership has the capacity to create a hyper-connected campus of the future and allow industry leading research. The applications of this technology are far-reaching, from virtual lessons, to advances in areas such as robotics and medical training and beyond, with technological innovations expected across a range of industries.

ATN universities are also contributing to growth in productivity. Over the past year, hundreds of start-ups were created by ATN students. Programs like UTS Startups, Curtin Accelerate, UniSA's Venture Catalyst and RMIT's LaunchHUB support start-ups with grant funding and mentoring. Each provides a strong platform from which students, staff and alumni can turn their ideas into functioning products and businesses.

We have been active in boosting participation in higher education, through the Government's Higher Education Participation and Partnerships Program (HEPPP). ATN universities currently teach over 7,000 students from non-English speaking backgrounds, over 8,000 students with a disability, over 1,500 Indigenous students, over 23,000 low socio-economic status students, and almost 13,000 students from regional and remote areas.

What universities need now is a supportive bridge to their next incarnation. We have already begun the process of restructuring and changing the way we operate, but further support is needed to see the sector through this difficult period.

We want to maintain and grow the crucial ecosystem and pipeline around research – which includes our higher degree by research (HDR) students, our business and industry partners, our international colleagues, and our valuable staff. Innovative and industry-engaged research will provide a crucial lifeline out of the pandemic and into recovery and prosperity.

The Job-ready Graduates Package provides additional places for students and now we need to support our research and translation efforts.

Just participation

To ensure our recovery from the pandemic provides opportunity across our economy, we need to ensure access to tertiary education that is adapted to the circumstances of students (e.g. Year 12 students whose completion of senior secondary studies has been disrupted by COVID-19, or mature students needing to up-skill and re-skill to remain in the workforce) and the post-pandemic economy. Our recommendations help support just, equitable and accessible participation in further education and training so everyone can contribute to and share in building a prosperous future.

Recommendation 1: Recognise regional needs in skill attainment

While the Job-ready Graduates Package recognises regional growth rates, it does not necessarily assist regions with low educational attainment. A fair and equitable system needs to provide flexible education and training pathways for people in these regions which will be most affected by the economic crisis and transformation of our economy.

Australia is a diverse country with a highly localised higher education system – the vast majority of students study within their home city or state. The rates of bachelor degree and above attainment vary across states and territories, for example 26.8 per cent in Victoria and 18.0 per cent in Tasmania (amongst people aged 15 years and above). To address these disparities and provide more opportunity for work and further education across Australia, it is necessary to ensure that funding mechanisms do not exacerbate existing disadvantages between states and territories.

Recommendation 2: Enable a just transition for affected workers

Some sectors of the economy will permanently change due to the pandemic – in many cases for the better – but some workers will inevitably be unable to participate in this transformation. Access to tertiary education will be critical to support their transition and help them find their place in the emerging economy.

This diverse group of workers will need a diversity of approaches – some will need support with foundational skills such as reading and writing, others will be able to shift into related areas with vocational training, and others will need to seek higher education.

For many, especially those with families to support, this will mean combining study and work in flexible and innovative ways. They will not be able to afford to spend time out of the workforce.

Recommendation 3: Support higher education to adapt to new types of students

Foundational qualifications are still vital, but universities will need to increasingly cater for a diverse range of students participating in lifelong learning, including mature age workers, disengaged workers, and school leavers disrupted by the pandemic. These new types of student will need an equitable way to access further education.

Australians are going to be returning to education and blending this study with their work. Many will already have a bachelor degree or similar qualification, but the changing needs of industry mean they are looking to supplement and augment that with further training.

Disengaged workers and school leavers affected by the pandemic will need pathway and enabling programs to help them re-engage with study. They will need a way to access education in an affordable and practical way that suits their circumstances.

Linear pathways of study and work will need to be replaced with ongoing and flexible engagement that takes into account the working lives of students and which could reasonably lead to the establishment of a skills account for everyday Australians.

Recommendation 4: Investment in job and career transition programs

Through the National Careers Institute and other programs, the Government is helping people with job and career transition and matching their skills to qualifications and jobs. This should continue in partnership with our other recommendations around just transitions and lifelong learning.

Pivoting pathways

Participation in education and training and skills mobility for our recovering economy will require the provision of pathways in partnership with industry that allow higher education to be more responsive and flexible. Our recommendations help to unlock and extend some of the innovative and dynamic practices already working in the system and provides them with the support they need to flourish and scale-up.

Recommendation 5: Funding mechanism for short courses and stackable credentials

ATN proposes the establishment of a fair funding mechanism that allows for Government, businesses and students to contribute to short courses and stackable micro-credentials. This is integral to a better blending of work and education that enables lifelong learning and produces ongoing productivity gains.

A crucial component of lifelong learning is a tertiary sector in which higher education and vocational education and training can retain their key characteristics and distinctive contributions and work constructively and collaboratively as the education and training engine of our economy. For flexible lifelong learning it is important that learners can engage with different types of education and move between sectors as needed (including robust mechanisms for recognition of prior learning and credit).

The flexibility that the modern student requires in order to have this blend of education requires a more flexible system of funding. The Government can support and encourage businesses and students to access the further education that meets their needs by ensuring that funding follows the student. Funding should not be the determinant of student choice and opportunity.

Recommendation 6: Reform postgraduate provision to meet student and industry needs and expectations

People taking a year or two out of the workforce for full-time postgraduate coursework or postgraduate research students remaining exclusively in academia are no longer the dominant models of postgraduate education. We need a system that allows for better integration of work and education.

Recommendation 7: Support industry to engage with teaching and learning

Employers increasingly need graduates to be work-ready and the Government has made this a clear priority in its Job-ready Graduates package and performance-based funding scheme. The Job-ready Graduates Package assists this by funding work experience in industry (WEI) units, but the integration can go further with ideas like authentic assessment and work-integrated learning which ATN universities have pioneered.

While many disciplines have a long tradition of placements and internships, it is often difficult to source sufficient places and ensure that they are structured in a way that supports students and in a way that does not create additional burdens on the workplace. Authentic assessment is one of the alternative ways that ATN universities are bringing industry practice and experience within the university.

Authentic assessment is core to enabling students to become the work-ready graduates Australia needs. It focuses on realistic practices, scenarios and contexts and develops students' graduate capabilities and evaluative judgement, preparing them to face the challenges of the future world of work. Authentic assessment challenges students intellectually and creatively whilst building understanding of contemporary professional practices. It also develops the higher-order thinking capabilities that characterise university education, such as critical and analytical thinking and the capacity to synthesise and communicate complex ideas for different audiences.

Providing assistance for universities and industry to engage in these kinds of ways will ensure that students are well-prepared, and industry has a cultural investment in their education (not just a financial one).

Recommendation 8: Encourage more businesses to employ PhD graduates and embrace innovation

The capacity and productivity of the Australian workforce should be increased by encouraging more businesses to employ PhD graduates and embrace innovation. PhD graduates (and other HDR graduates) are increasingly working with and within industry, not just in universities and other research institutions. These graduates bring with them the ability to transform these businesses with their connection to cutting-edge research and ability to undertake research and development into new fields.

Preparing these graduates for this type of industry collaboration and innovation is an ongoing area of focus for ATN universities. Encouraging businesses to employ PhD graduates could be done as part of the R&D tax incentives. Allowing businesses to claim a tax incentive to cover salary costs (or part of them) for the first year a recent PhD graduate is employed would allow these graduates enough time to start proving the productivity gains and innovation they can bring to the business. This would also help to broaden and extend the research workforce and maintain the research pipeline (see Recommendation 15 on page 8).

Recommendation 9: Encourage co-investment in skills by Government, universities and businesses

All these recommendations encourage and rely on universities and businesses working more closely together, but that initial engagement still needs to be supported until businesses begin to see the productivity and skills gains.

ATN universities have programs in place such as:

- work-integrated learning to embed students' knowledge and skills in practical contexts
- authentic assessment that reflects real world applications to ensure our graduates are industry-ready
- precincts and hubs where the universities are anchor institutions bringing together industry, start-ups and community organisations.

Universities are generators of learning, teaching, research, and applied innovation, and occupy important places in the social and economic fabric of their communities. Further unlocking this potential will ensure a continuing public return on investment.

Australia needs a funding mechanism that allows student and businesses to both contribute to short courses and stackable credentials that the university design and delivers as part of a genuine partnership with industry. Australia's recovery will depend on workers having access to quality short courses and stackable credentials to up-skill or re-skill in a relatively small timeframe.

Productive partnerships

Participation and pathways will be built on effective and strategic partnerships between higher education, industry and governments. Our recommendations help nurture the kinds of partnerships that will deliver ongoing benefits to productivity, jobs and our economy.

Recommendation 10: Create trans-national campus launching pads

ATN proposes that Government utilise universities existing infrastructure and relationships to create entrepreneurial launching pads for start-ups, scale-ups and SMEs, in an international context, by taking advantage of universities' existing overseas campuses. In partnership with other countries, this can be reciprocated by hosting entrepreneurs, innovators and researchers from overseas at local Australian campuses.

Universities will play a key role in the delivering on Australia's international partnerships. For example, education was a key focus of the Prime Minister's visit to Vietnam late last year, including collaboration through partnerships such as the Aus4Innovation Partnership Grants program. Universities will also play a key role in other priorities raised during that visit, such as public service leadership and innovation, urban planning, and entrepreneurship.

ATN universities already have a global focus for local results – ATN has partnerships with the E9 (an alliance of nine Chinese technology-focused universities) and the TU9 (an alliance of nine technical universities in Germany) and has strong engagement with Indian institutes of technology.

With an eye to Australia's recovery, we have a focus on advanced manufacturing which has globalised the manufacturing supply chain – primary resources, capital, machinery, parts and expertise are exported across the world. It is important that Australian businesses and universities can link into this global supply chain by sharing research, expertise, resources and manufacturing capacity. Government efforts to support international linkages into the global supply chain will be necessary to aid Australia's recovery.

Recommendation 11: Back revenue contingent loans and vouchers for research and development

Start-ups, scale-ups and SMEs often lack the funding and financing they need to invest in research and development at Australian universities. By backing revenue contingent loans, the Government funds innovative and practical research but also receives a return that can be funnelled back into further research.

Innovation vouchers are another option which have been used successfully by state governments. These vouchers have helped SMEs to access research and development, product development, technology transfer and commercialisation services. They support the building of relationships between SMEs, researchers and specialist services and act as a catalyst for the product development cycle.

Targeting this investment directly to SMEs makes sense, especially given that the Government's proposed changes to the R&D incentives provide more support to large, R&D intensive firms. SMEs are more likely to be embedded in their local economy and community and the direct benefit from this investment will be felt earlier in these communities. The benefit of direct investment in SME activity is that the investment will remain in the Australian economy and growing SMEs will be spending money locally.

Encouraging collaboration with universities, and providing options tailored to SMEs, means that Australia makes the most out of its investment in research, staff and public infrastructure by leveraging co-investment by private enterprise.

Recommendation 12: Set up a research translation fund

Establishing a research translation and entrepreneurship fund in partnership with Government and business will help to maximise the benefits of existing research and intellectual property, that universities and their industry partners (ranging from SMEs to large businesses) can use to generate practical and effective solutions to real-world problems.

These kinds of collaborations between universities and businesses ensures the knowledge transfer goes both ways. Businesses and workers gain access to world-class research, knowledge and technology, and the researchers gain a better understanding of how their work can impact industry and society.

Recommendation 13: Set up a business re-structure fund

Universities have extensive expertise in areas such as business, marketing, logistics, optimisation, and materials research. This could be leveraged to provide support and mentorship for small to medium sized businesses to transform, adapt and grow in the post-pandemic recovery. We have already seen examples of this in sector's contribution to business recovery after the January bushfires.

This could take many forms depending on the university and the business, so flexibility in the scheme is important. The fund could support a range of activities including direct consultations and evaluations by academics, student projects as part of their assessment and work experience, internships and placements, and sponsored projects for HDR students and graduates. This will turbocharge the Government's aspiration for job-ready graduates as well as providing numerous opportunities for students to receive work integrated learning.

Recommendation 14: Build a network of national strategic capability

Australia needs supportive collaboration between Government (including defence), universities and other public institutions to create an accessible network of key capabilities in research, manufacturing, cyber-security and data infrastructure that can provide ongoing benefit to those organisations and safeguard against future crises.

Having shared infrastructure encourages the development of partnerships between these organisations and collaborative research projects in line with Australia's strategic priorities. Enabling access to this infrastructure means that Australia receives ongoing value from its investment and builds the necessary experience and expertise needed.

Recommendation 15: Maintain a research pipeline

Australia needs a both a pipeline of research talent and opportunities, and a pipeline of research from discovery through to commercialisation.

Many early and mid-career researchers have been especially affected by the pandemic with disruptions to their teaching, research, and grant opportunities. Australia will rely on these researchers in the years to come, so it is important that we continue to support this cohort of researchers to ensure they stay in their field and stay attached to their institutions.

ATN universities are specialists in industry engaged research which, by its nature, is research that has a high impact on the economy and society. However, we also recognise the need for funding and supporting research at all stages from discovery to commercialisation. The results, insights and solutions that applied research produces relies on a foundation of discovery research.

Conclusion

As Australia's four most innovative and enterprising universities, ATN universities is ready and able to help see Australia through the current crisis and help re-build in the recovery. It is in our nature and ethos to collaborate with the Government, partner with industry, and ensure our teaching and research is aligned to workforce needs.

ATN universities have a strong focus on widening participation in education, providing flexible and engaging pathways for our students and boosting the productivity of the economy with world-class graduates and research. We have set out a considered and responsible set of recommendations that will not only assist in the management of this crisis and the recovery, but make the investments Australia needs for future and ongoing prosperity.

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